DOCUMENT RESUME

ED 444 534 IR 020 190

AUTHOR Nisanci, Muge
TITLE Instructional Software Evaluation Criteria Used by the Teachers: Implications from Thecry to Practice.
PUB DATE 2000-00-00
NOTE 6p.; In: Society for Information Technology & Teacher Education International Conference: Proceedings of SITE 2000 (11th, San Diego, California, February 8-12, 2000). Volumes 1-3; see IR 020 112.
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Assisted Instruction; *Computer Software Evaluation; Computer Software Selection; *Courseware; Elementary Secondary Education; *Evaluation Criteria; Foreign Countries; *Multimedia Materials; Teacher Surveys; Theory Practice Relationship
IDENTIFIERS Turkey

ABSTRACT

This study examined the perceptions of basic education school teachers in Turkey to the educational software evaluation criteria, developed for the acquisition of multimedia instructional software by the Turkish Ministry of National Education, from the viewpoint of actual users. Data were collected through structured interviews, group discussions, and participant observation. The findings indicate that instructional adequacy is the most important criterion both from the theoretical and from the practical perspective; a second factor mentioned was that effective instructional software should include real-life examples and simulations of abstract concepts. Criteria considered as having secondary importance were the variety and number of exercises, the aspect of developing students' creativity and critical thinking capacity, presentation of accurate information, being free from scientific errors, individualizing learning, being in accordance with the pedagogical level of students, and being enriched through the use of a variety of sound effects, images, videos, and animations. Other questions addressed the conditions under which instructional software was used and issues to be taken into consideration in the future phases of instructional software procurement and technology assisted instruction. (Contains 11 references.) (MES)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 444 534

INSTRUCTIONAL SOFTWARE EVALUATION CRITERIA USED BY THE TEACHERS: IMPLICATIONS FROM THEORY TO PRACTICE

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

G.H. Marks

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Muge NANCI
Basic Education Program Coordination Council
Ministry of National Education
Milli E itim Bakanl Kat:1 Blok:B
Bakanl klar, Ankara, TURKEY
mnisanci@meb.gov.tr

Abstract: This study examines the perception of basic education school teachers on the theoretically developed educational software evaluation criteria from the viewpoint of actual users. Data was collected through structured interviews, group discussions and participant observation. The findings indicate that instructional adequacy is the most important criterion both from the theoretical and from the practical perspective.

Background

The age of technology carries with itself several requirements for all educational institutions to respond in order to keep up with it. On the other hand, evaluation of educational technology programs has its place as a particularly hard task among others. As there is an increase in the number of countries making efficient use of technology and developing technology plans and strategies to the aim of improving the quality of education and learning achievement, there rises the need for understanding the impact of technology on improving the student achievement.

The Ministry of National Education of the Republic of Turkey (MONE), like all other educational institutions, face the necessity of preparing students for the 21st century. Towards this objective, the Ministry has initiated a reform program, first step of which has been to extend the period of basic education from five to eight years. This reform program was legalized through the passage of the Basic Education Law No.4306 in 1997, which also enacted several additional revenues to finance the Government s Basic Education Program.

The Basic Education Program is the Government s action program to apply its new basic education strategy, the objectives of which are (a) to achieve universal coverage in an expanded eight-year basic education cycle, (b) to improve the quality of basic education, and (c) to make basic education schools a learning source for the community. The Program aims to achieve these objectives through (a) expanding the capacity of basic education schools throughout the country, (b) facilitating school attendance of children who are least likely to attend school, (c) reducing classroom overcrowding and double shifting, (d) improving training and incentives for teachers, (e) improving the supply of educational materials to basic education schools, (f) introducing computer-aided learning, and (g) increasing parental and community involvement in schools (World Bank, 1998).

Total estimated cost of this program is USD 11.2 billion for a total of three years. The aforementioned revenues would finance approximately 90% of the Program, and to respond to the remaining, a partnership has been established with the World Bank, which has mainly focused on the qualitative part of the Program. USD 300 million loan was received from the World Bank to finance the first phase of the whole Basic Education Program, which consists of renovation, rehabilitation and construction of additional facilities for 340 basic education schools in rural and slum areas, provision of instructional materials, textbooks, and stationary to those students in rural schools, and to provision of 2828 IT Rooms in 2451 basic education schools throughout the country. These 2451 schools have been selected from all provinces on the basis of at least two schools from each sub-province. The scope of the IT Component of the Basic Education Program will be expanded in the second and third phases to cover approximately 15,000 basic education schools located in Turkey.

To the aim of improving the quality of education, the Ministry of National Education has intended to provide all basic education schools with IT Rooms where children will become computer literate and work with computers to support their education (MONE, 1999). Since the objective is to put the technology into the use in all basic education schools, the IT Rooms have been designed to have, besides computers, overhead projectors

IR020190

BEST COPY AVAILABLE

and some other technologies. In order to enable an efficient and full use of these technological equipment by the students and teachers, the Ministry has also aimed at providing all instructional materials to these schools, ranging from transparencies, educational video tapes, handbooks for teachers, and multimedia instructional software.

Amongst the Ministry s endeavor to create an effective learning environment for teachers and students, the provision of multimedia instructional software has had a very important place, since acquisition of software needs a very detailed examination and evaluation of the software submitted. The Ministry, as for the procurement of computer hardware and other technological equipment, has held an international competitive bidding for the procurement of multimedia instructional software. The preparation of the bidding documents, particularly of the technical specifications, has been done through a hard process, on the basis of a thorough literature review. The technical specifications, prepared in coordination with the specialists, have consisted of a detailed evaluation criteria based on national and international literature and applications, to be used for the procurement of educational software including multimedia instructional software in several subject areas between 1st-8th grades (English, German, French, Turkish, Science, Social Sciences, and Mathematics), electronic references, and educational games.

The criteria prepared by the MONE is based on four main areas; namely, (1) curriculum adequacy, (2) instructional adequacy, (3) programming adequacy, and (4) cosmetic adequacy. There are several items under each title, which are clearly defined and scored accordingly. The essential items within the criteria have consisted of consistency with the curriculum, adequacy to the pedagogical level of the students, ease of use, use of colors, etc, among which the consistency with the curriculum has been the primary one: Any software which could not respond to this item would not be taken to further evaluation.

Following the bid opening, the Ministry of National Education has established committees for technical evaluation of the multimedia instructional software submitted to the bidding. The committees consisted of subject area teachers who were currently working in the basic educational schools, subject area teachers who were currently working for the Board of Education of the MONE (a Board responsible for evaluating and approving any kind of instructional material to be utilized in primary and secondary education level), computer teachers, Turkish language teachers, and pedagogues. The committees have reviewed, evaluated, and scored accordingly a total of 230 instructional software within 6-month period. This period has also covered a fifteen-day basic training on multimedia instructional software evaluation. Those teachers participated in the technical evaluation committees were, then, asked for evaluating the criteria on which the technical evaluation has been based, and for providing recommendations from the perspective of practicing teachers.

The Study

The purpose of this study is to explore the applicability of the instructional software evaluation criteria developed for the acquisition of Multimedia Instructional Software by the Turkish Ministry of National Education. The study focuses on what teachers who have actively participated in the evaluation process have found most practical/feasible/applicable and what have found unnecessary or to-be- modified among those criteria developed on the basis of literature and theory.

For instructional software evaluation, there has been an crescent need for qualified human resources required, towards the provision of an efficient learning environment and the improvement of learning quality and achievement. This is also the case for Turkey. Besides, Turkey do not have a specific research institution specialized on software development or evaluation process. However, it is possible to obtain information from various researches on in-class use of technology (U.S. Department of Education, 1988) and other studies conducted by private software evaluation companies (Children Software Review, 1995). Among the features of a good instructional software, articles, dominantly, speaks of motivation, user control, Internet access, timely and efficient feedback, pedagogical adequacy, interactivity and instructional content (Hannefin & Pack, 1988; Alessi & Trollip, 1991; Comer & Geissler, 1998; Baumgartner & Payr, 1996; Persichitte, 1995; Caftori & Paprzcki, 1997; Abramson, 1998). Notwithstanding, the researches in this field, also forewarn the researchers about the application of a social science approach to the evaluation of multimedia products (Baumgartner & Payr, 1996; Reeves, 1993). Thus, it is essential to know how the literature-based educational software evaluation criteria differ from any other software evaluation criteria developed considering teaching experience and application of utmost importance and what the impact of such criteria on output is.

Instructional software evaluation criteria observed during the literature review have focused on the importance of instructional quality, which is one of the most significant among the Ministry s evaluation criteria.

The criteria observed have foreseen to support the instruction process through the use of several instructional strategies where computer use has the central role, via following such basic steps as stimuli, guidance, drill and practice, and assessment (Abramson, 1998).

Other essential issues emphasized in the literature, besides instructional content, have consisted of efficient and proper use of computers through the aim of related instructional objectives, being free of technical errors, and use of accurate engineering processes (Persichitte, 1995).

Some researches conducted as to the instructional software evaluation have been based on applying a supervision mechanism to some extent for the use of instructional software. Another relevant issue has been that some instructional software labeled as instructional or educational may not be instructional or educational at all, and those software may not serve to instructional or educational objectives. Hence, these researches point out the problem of evaluation and supervision, two important criteria in the use of instructional software. This brings another question: the necessity for taking into consideration some other criteria to enable the teacher to evaluate and supervise student use and achievement, along with student control (Caffori & Paprzcki, 1997).

Another problem taken into consideration in the researches concerned has been that the instructional software evaluation processes have not included professionals specialized on pedagogy. Similarly, those researches, which have revealed the problems encountered as to the instructional software evaluation methods, have recommended a social sciences approach to software evaluation process in order to overcome these problems (Baumgartner & Payr, 1996).

In view of these studies and researches, this study lays open to view the instructional software evaluation criteria prepared and utilized by the Ministry of National Education for the acquisition of off-the-shelf instructional software, through making use of qualitative research method. Information has been obtained from a group of those teachers participated in software evaluation process through interviews and open-ended questions. The study has also employed a variety of data collection methods ranging from documentary evidences to interpretation of the comments of the senior staff of the Ministry who are a part of the Ministry s education policy. Data analysis method used in this study consists of data examination, data reduction, data display, and finally conclusion drawing from specific to a more generalized (Miles & Huberman, 1994).

Results

As stated before, participants of this study are those teachers participated in the Ministry s multimedia instructional software procurement evaluation process. 10 volunteer participants were observed from the beginning of the evaluation process. Besides these observations, 10 participant teachers were asked to respond, in written, to four open-ended questions at the end of the evaluation. Responses to these questions have shown certain emphasis on certain issues as to the instructional software evaluation.

Responses to the first question, which is for determining the conditions, as a teacher, under which instructional software may be used, have pointed out that necessary physical conditions and hardware. Three of the participants have stated that it is essential to provide a computer per student for an efficient implementation of technology assisted instruction. Merely two of the participants have emphasized a re-arrangement of the curriculum, and an effective time management for technology assisted instruction. Quality of the instructional software, amount and variety of the instructional software to be used, and provision of in-service training to teachers on the use of instructional software to support educational activities are the factors disregarded by the participants.

The second question is related to criteria, to which instructional software has to respond, to be utilized for educational purposes. Participants responses to this question have concentrated on the criterion of being consistent with and supportive of the curriculum. The second factor mentioned has been that an effective instructional software should include examples from real life and simulations of abstract concepts in real life to allow the students these concepts with their actual lives. The criteria considered as having secondary importance have been the variety and number of exercises, aspect of developing students creativity and critical thinking capacity, presentation of accurate information, being free from scientific errors, individualizing learning, being in accordance with the pedagogical level of students, and being enriched through the use of a variety of sound effects, images, videos and animations. Content-related richness, motivation and technical features have only been emphasized by two participants.

The shortcomings observed in the evaluation process of the instructional software submitted for the Ministry s procurement process have included, primarily, consistency with the curriculum, being supportive to

the curriculum, proper use of Turkish language, proper use of audio-visual effects in required amount, and consistency with the pedagogical level of users. It has been stated that software s being free of technical errors shall prevent students disappointment and losing their motivation. It has also been emphasized that informing students of the objectives before the lesson shall have a positive impact on learning. In view of the fact that the participants have not mentioned about the provision of examples from real life and the use of effective simulations, which have been emphasized for the second question, it has been considered that the software submitted to the Ministry have responded well to these criteria.

The last question asked was related to the issues to be taken into consideration in the future phases of instructional software procurement and technology assisted instruction. Two answers to this question were emphasized much. The criterion of consistency with the pedagogical level of students has also been of utmost importance for this question. Another significant issue underlined by the participants has been the formal measures to be taken at the senior level and circulation or regulations to be issued by the Ministry. These participants have stated that the central Ministry should take necessary measures to ensure the efficient use of IT Rooms. Three of the participants have pointed out the necessity of strengthening local software production sector, supporting an increase in the number of software companies, and accordingly the number of software in the market, and ensuring competition among the software market. Issues having secondary importance have been stated as taking into consideration national conditions for software production, and as preparing the technical specification in more detail. Some participants have recommended as essential as having modern and contemporary content, ensuring interactivity with the student, and providing teacher training on the use of instructional software. Only one participant has emphasized the importance of having students views and comments during the software production and development process, since they are the actual users of the software. Another participant underlined the necessity of having a pilot application for efficient use of such a large-scale project.

Taking into consideration the socio-economic status of the participants and the schools where they were working, it has been observed that these participant teachers have been working in those schools attended by lower-middle-class children, and that, accordingly, they have not been familiar with technological applications. Hence, while participant teachers have been responding well to the efforts for technology assisted instruction, according to them, the provision of physical conditions and necessary hardware are the primary criteria for using technology in educational activities since they have had no opportunity for application. In parallel, participant teachers have stated that responsibility of expansion and of efficient implementation of computer literacy and technology assisted instruction has been of the Ministry, and emphasized the importance of teacher training and necessary formal measures for effective use of technology in education.

When we look at the Ministry s part, we see that the most essential criterion of an instructional software from the perspective of the senior staff of the Ministry has been the instructional content. Consistency with the curriculum, and at least being supportive of the curriculum, is of utmost importance for the central Ministry. The second important factor for the Ministry is the consistency with the national values of Turkish culture and presenting no deviation from the constitution of the Republic of Turkey. The written content and all other images, pictures and animation should also be respectful to these criteria. From the interviews, it has been seen that the senior Ministry staff considers teachers as the most essential factors and, believes in the importance of teacher training for an efficient implementation of technology assisted education. The provision of physical facilities and necessary hardware is of secondary importance to the Ministry because the Ministry assures that all physical conditions can be provided with no problem.

Conclusion

Those issues, received by the participant teachers both through observations and interviews, show no major deviation either from the literature or from the criteria prepared by the Ministry based on the literature. As stated in the literature, the participant teachers have emphasized most the importance of preventing the instructional and educational nature of the instructional software, of being supportive to the curriculum, of ensuring interactivity with the student, of motivating students, of reinforcing the students through the use of drills and exercises, and of having simulations to present abstract concepts to students.

BEST COPY AVAILABLE

References

Abramson, G. (1998). Indicators of Good Software Learning Tools. Technology and Teacher Education Annual. AACE: Charlottesville, VA.

Alessi, S.M. & Trollip, S.R. (1991). Computer Based Instruction: methods and development. Prentice Hall: Englewood Cliffs, NJ.

Baumgartner, P. & Payr, S. (1998). Learning as Action: A Social Science Approach to the Evaluation of Interactive Media. Technology and Teacher Education Annual. AACE: Charlottesville, VA.

Cafiori, N. & Paprzycki, M. (1997). The Design, Evaluation and Use of Educational Software. Technology and Teacher Education Annual. AACE: Charlottesville, VA.

Comer, P.G. & Geissler, C. (1998). A Methodology for Software Evaluation. Technology and Teacher Education Annual. AACE: Charlottesville, VA.

Hannafin, M. & Peck, K. (1988). The Design, Development and Evaluation of Instructional Software. Macmillan Publishing: NY.

Miles, M.B. & Huberman, A.M. (1994). Qualitative Data Analysis: An expanded source book. Thousand Oaks: Sage Publications.

MONE. (1999). Policy Paper for the Information Technology Component of the Basic Education Program. Ankara, Turkey.

Pernichitte, K. (1999). http://www.coe.uh.edu/insite/elec_p

Reeves, T.C. (1993). Evaluating Technology Based Learning. In Piskurich, (1993). Handbook of Information Technology. A.S.T.D.

World Bank. (1998). Project Appraisal Document on a Proposed Adaptable Program Loan in the Amount of US$ 300 Million Equivalent to the Republic of Turkey for a Basic Education Project in Support of the First Phase of the Basic Education Program (Report No.17877-TU).

Acknowledgements

I would like to express my sincere gratitude to Assist. Prof. Soner Yildirim of the Middle East Technical University who supported and guided me during this study. I am also thankful to the participant teachers in the evaluation committees, and the senior staff of the Turkish Ministry of National Education, for all their help and support.